

## **Demonstration of a High Accuracy WVR-based Troposphere Calibration System**

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We have conducted tests of a new generation of Water Vapor Radiometers (WVR) , using connected element radio interferometry over a 21 km baseline at Goldstone, California. These new WVRs have an advanced gain stabilization system, and use a clear aperture antenna to achieve a narrow ( $1^\circ$  FWHM) beam with very low sidelobes. Data from a Microwave Temperature Profiler allow a more accurate path delay retrieval than would be possible with a WVR alone.

On eleven days in the first seven months of 2000, we obtained simultaneous interferometry and WVR data with long ( $>2000$  s), continuous scans on a compact radio source. The rms, zenith-equivalent interferometer delays (after removal of a least squares linear fit) for each scan ranged from 1.3 mm to 6.1 mm (mean of 2.9 mm) before calibration. After WVR calibration, the range was 0.4 mm to 2.3 mm (mean of 1.2 mm). When tested as a calibration for delay changes, the WVR data reduced the level of fluctuations seen with the interferometer by factors of 1.4 to 3.9 (mean of 2.5) on timescales of 300 s, and by factors of 1.7 to 5.7 (mean of 2.7) on timescales of 1000 s.

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